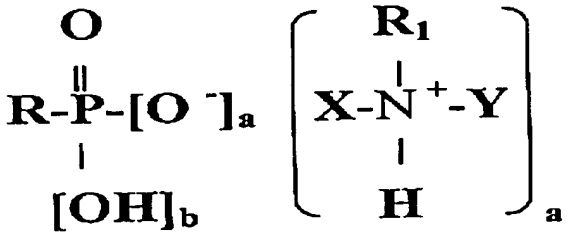
WE CLAIM:

1. A method of treating metal pigment particles for inhibiting their reaction with water, comprising:

contacting a composition comprising metal pigment particles with a salt having the following formula



wherein a ranges from 0.25 to 2.0,

b ranges from 0.0 to 1.75, and a + b = 2.0,

R is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, and alkylaryl and comprises at least 6 carbon atoms;

R_1 comprises at least six carbon atoms and is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, or alkylaryl; and

X and Y are each independently either hydrogen or a moiety having from 1 to 20 carbon atoms selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, and alkylaryl.

2. The method according to claim 1, wherein R further comprises at least one functional group selected from the group consisting of hydroxyl, carbonyl, carboxyl, epoxy, ether, amino, nitro, nitrile, thio, silyl, sulfo, phosphato and halo.

3. The method according to claim 1, wherein X and Y each independently have at least one functional group selected from the group consisting of hydroxyl, carbonyl, carboxyl, epoxy, ether, amino, nitro, nitrile, thio, silyl, sulfo, phosphato and halo.

4. The method according to claim 1, wherein R_1 comprises at least eight carbon atoms.

5. The method according to claim 1, wherein R_1 comprises at least one functional group selected from the group consisting of hydroxyl, carbonyl, carboxyl, epoxy, ether, amino, nitro, nitrile, thio, silyl, sulfo, phosphato and halo.

6. The method according to claim 1, wherein a ranges from 1.0 to 2.0.

7. The method according to claim 1, wherein b ranges from 0.0 to 1.0.

8. The method according to claim 1, wherein the compound is added neat.

9. The method according to claim 1, wherein the compound is added as a solution, the solution comprising the compound and a solvent that is miscible with water.

10. The method according to claim 1, wherein the metal particles are aluminum, zinc, or bronze particles.

11. The method according to claim 10, wherein the metal particles are aluminum.

12. The method according to claim 1, wherein the metal particles have a particle size ranging from 1 to 500 microns.

13. The method according to claim 1, wherein the metal particles have a particle size ranging from 5 to 100 microns.

14. The method according to claim 1, wherein the metal particles are in flake form.

15. The method according to claim 1, wherein the metal particles are in a paste comprising 55 to 95% by weight metal particles.

16. The method according to claim 15, wherein the paste comprises 60 to 85% by weight metal particles.

17. The method according to claim 1, wherein the metal particles are in a slurry comprising 1 to 40% by weight metal particles.

18. The method according to claim 17, wherein the slurry comprises 10 to 30% by weight metal particles.

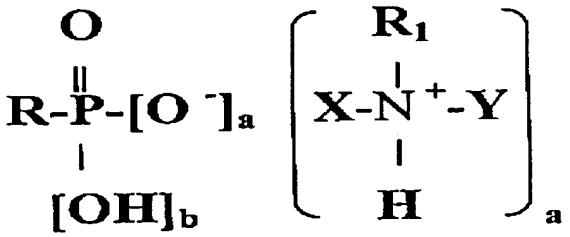
19. The method according to claim 1, wherein the amount of salt added ranges from 0.5 to 30% with respect to the weight of the metal particles.

20. The method according to claim 1, wherein the amount of salt added ranges from 1 to 15% with respect to the weight of the metal particles.

21. The method according to claim 1, wherein the salt and the metal particles are agitated at a temperature ranging from 0 to 100 °C.

22. The method according to claim 1, further comprising filtering liquid.

23. A method of method of making a coating composition, comprising adding metal pigment particles and a salt having the following formula to an aqueous coating composition carrier



wherein a ranges from 0.25 to 2.0,

b ranges from 0.0 to 1.75, and a + b = 2.0,

R is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, and alkylaryl and comprises at least 6 carbon atoms;

R_1 comprises at least six carbon atoms and is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, or alkylaryl; and

X and Y are each independently either hydrogen or a moiety having from 1 to 20 carbon atoms selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, and alkylaryl.

24. The method according to claim 23, wherein R further comprises at least one functional group selected from the group consisting of hydroxyl, carbonyl, carboxyl, epoxy, ether, amino, nitro, nitrile, thio, silyl, sulfo, phosphato and halo.

25. The method according to claim 23, wherein X and Y each independently comprise at least one functional group selected from the group consisting of hydroxyl, carbonyl, carboxyl, epoxy, ether, amino, nitro, nitrile, thio, silyl, sulfo, phosphato and halo.

26. The method according to claim 23, wherein a ranges from 1.0 to 2.0.

27. The method according to claim 23, wherein b ranges from 0.0 to 1.0.

28. The method according to claim 23, wherein R_1 comprises at least eight carbon atoms.

29. The method according to claim 23, wherein R_1 comprises at least one functional group selected from the group consisting of hydroxyl, carbonyl, carboxyl, epoxy, ether, amino, nitro, nitrile, thio, silyl, sulfo, phosphato and halo.

30. The method according to claim 23, wherein the salt is added first.

31. The method according to claim 23, wherein the salt is added after the metal particles are added.

32. The method according to claim 31, wherein the salt is added within 30 minutes of contacting the metal particles with water contained in any component of the coating composition.

33. The method according to claim 23, wherein the metal particles are aluminum, zinc, or bronze particles.

34. The method according to claim 33, wherein the metal particles are aluminum.

35. The method according to claim 23, wherein the metal particles have a particle size ranging from 1 to 500 microns.

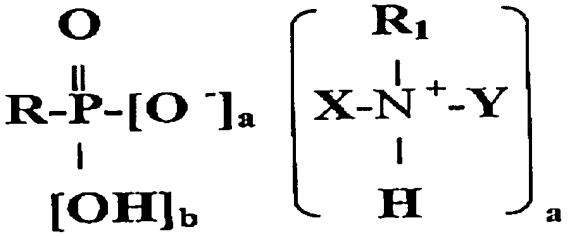
36. The method according to claim 23, wherein the metal particles have a particle size ranging from 5 to 100 microns.

37. The method according to claim 23, wherein the metal particles are spherical or are in flake form.

38. The method according to claim 23, wherein the amount of salt added ranges from 0.5 to 30% with respect to the weight of the metal particles.

39. The method according to claim 23, wherein the amount of salt added ranges from 1 to 15% with respect to the weight of the metal particles.

40. A method of treating metal pigment particles for inhibiting their reaction with water, comprising milling the particles with a salt having the following formula dissolved in a lubricant



wherein a ranges from 0.25 to 2.0,

b ranges from 0.0 to 1.75, and a + b = 2.0,

R is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, and alkylaryl and comprises at least 6 carbon atoms;

R_1 comprises at least six carbon atoms and is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, or alkylaryl; and

X and Y are each independently either hydrogen or a moiety having from 1 to 20 carbon atoms selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, and alkylaryl.

41. The method according to claim 40, wherein R further comprises at least one functional group selected from the group consisting of hydroxyl, carbonyl, carboxyl, epoxy, ether, amino, nitro, nitrile, thio, silyl, sulfo, phosphato and halo.

42. The method according to claim 40, wherein X and Y each independently comprise at least one functional group selected from the group consisting of hydroxyl, carbonyl, carboxyl, epoxy, ether, amino, nitro, nitrile, thio, silyl, sulfo, phosphato and halo.

43. The method according to claim 40, wherein a ranges from 1.0 to 2.0.

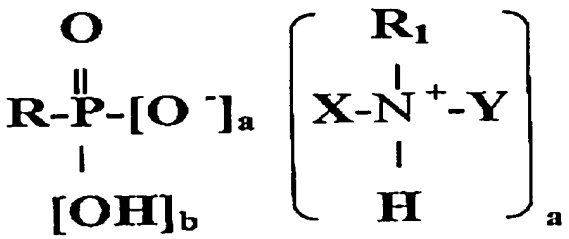
44. The method according to claim 40, wherein b ranges from 0.0 to 1.0.

45. The method according to claim 40, wherein R_1 comprises at least eight carbon atoms.

46. The method according to claim 40, wherein R_1 comprises at least one functional group selected from the group consisting of hydroxyl, carbonyl, carboxyl, epoxy, ether, amino, nitro, nitrile, thio, silyl, sulfo, phosphato and halo.

47. A coating composition comprising:

a metal pigment particles treated with a salt having the following formula for inhibiting their reaction with water



wherein a ranges from 0.25 to 2.0,

b ranges from 0.0 to 1.75, and a + b = 2.0,

R is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, and alkylaryl and comprises at least 6 carbon atoms;

R_1 comprises at least six carbon atoms and is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, or alkylaryl; and

X and Y are each independently either hydrogen or a moiety having from 1 to 20 carbon atoms selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, and alkylaryl; and

a carrier.

48. The coating composition according to claim 47, wherein R further comprises at least one functional group selected from the group consisting of hydroxyl, carbonyl, carboxyl, epoxy, ether, amino, nitro, nitrile, thio, silyl, sulfo, phosphato and halo.

49. The coating composition according to claim 47, wherein X and Y each independently have at least one functional group selected from the group consisting of hydroxyl, carbonyl, carboxyl, epoxy, ether, amino, nitro, nitrile, thio, silyl, sulfo, phosphato and halo.

50. The coating composition according to claim 47, wherein a ranges from 1.0 to 2.0.

51. The coating composition according to claim 47, wherein b ranges from 0.0 to 1.0.

52. The coating composition according to claim 47, wherein R_1 comprises at least eight carbon atoms.

53. The coating composition according to claim 47, wherein R_1 comprises at least one functional group selected from the group consisting of hydroxyl, carbonyl, carboxyl, epoxy, ether, amino, nitro, nitrile, thio, silyl, sulfo, phosphato and halo.

54. The coating composition according to claim 47, wherein the metal particles are aluminum, zinc, or bronze particles.

55. The coating composition according to claim 54, wherein the metal particles are aluminum.

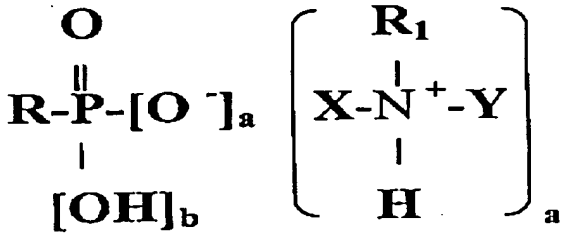
56. The coating composition according to claim 47, wherein the metal particles have a particle size ranging from 1 to 500 microns.

57. The coating composition according to claim 47, wherein the metal particles have a particle size ranging from 5 to 100 microns.

58. The coating composition according to claim 47, wherein the metal particles are spherical or are in flake form.

59. A metallic paste comprising:

a) metal pigment particles treated with a salt having the following formula to inhibit their reaction with water



wherein a ranges from 0.25 to 2.0,

b ranges from 0.0 to 1.75, and a + b = 2.0,

R is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, and alkylaryl and comprises at least 6 carbon atoms;

R_1 comprises at least six carbon atoms and is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, or alkylaryl; and

X and Y are each independently either hydrogen or a moiety having from 1 to 20 carbon atoms selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, and alkylaryl; and

b) a liquid for forming the paste.

60. The metallic paste according to claim 59, wherein R further comprises at least one functional group selected from the group consisting of hydroxyl, carbonyl, carboxyl, epoxy, ether, amino, nitro, nitrile, thio, silyl, sulfo, phosphato and halo.

61. The metallic paste according to claim 59, wherein X and Y each independently comprise at least one functional group selected from the group consisting of hydroxyl, carbonyl, carboxyl, epoxy, ether, amino, nitro, nitrile, thio, silyl, sulfo, phosphato and halo.

62. The metallic paste according to claim 59, wherein a ranges from 1.0 to 2.0.

63. The metallic paste according to claim 59, wherein b ranges from 0.0 to 1.0.

64. The method according to claim 59, wherein R_1 comprises at least eight carbon atoms.

65. The method according to claim 59, wherein R_1 comprises at least one functional group selected from the group consisting of hydroxyl, carbonyl, carboxyl, epoxy, ether, amino, nitro, nitrile, thio, silyl, sulfo, phosphato and halo.

66. The metallic paste according to claim 59, wherein the metal particles are aluminum, zinc, or bronze particles.

67. The metallic paste according to claim 66, wherein the metal particles are aluminum.

68. The metallic paste according to claim 59, wherein the metal particles have a particle size ranging from 1 to 500 microns.

69. The metallic paste according to claim 59, wherein the metal particles have a particle size ranging from 5 to 100 microns.

70. The metallic paste according to claim 59, wherein the metal particles are spherical or are in flake form.

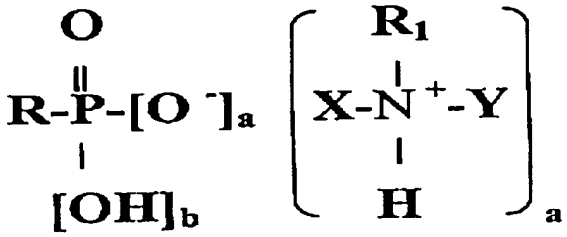
71. A method of making a coating composition, comprising mixing the paste of claim 59 with a carrier to form the coating composition.

72. A method of treating metal pigment particles for inhibiting their reaction with water, comprising contacting a composition comprising metal pigment particles with an amine-neutralized phosphonic acid salt.

73. An automobile coated with the coating composition according to claim 47.

74. A metal pigment particle dispersion for forming metal pigment particle-containing coating compositions, comprising:

a) metal pigment particles treated with a salt having the following formula to inhibit their reaction with water



wherein a ranges from 0.25 to 2.0,

b ranges from 0.0 to 1.75, and a + b = 2.0,

R is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, and alkylaryl and comprises at least 6 carbon atoms;

R_1 comprises at least six carbon atoms and is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, or alkylaryl, and

X and Y are each independently either hydrogen or a moiety having from 1 to 20 carbon atoms selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, and alkylaryl, and

b) a dispersion carrier for the metal pigment particles, the dispersion carrier being liquid at room temperature and compatible with a vehicle for forming a coating composition

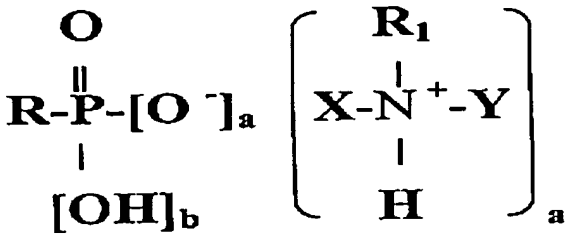
wherein, the metal pigment particles are capable of remaining in a dispersed state in the dispersion substantially without separation.

75. The dispersion according to claim 74, wherein R further comprises at least one functional group selected from the group consisting of hydroxyl, carbonyl, carboxyl, epoxy, ether, amino, nitro, nitrile, thio, silyl, sulfo, phosphato and halo.

76. The dispersion according to claim 74, wherein X and Y each independently have at least one functional group selected from the group consisting of hydroxyl, carbonyl, carboxyl, epoxy, ether, amino, nitro, nitrile, thio, silyl, sulfo, phosphato and halo.

77. A method of making a metal pigment particle dispersion for forming a metal pigment particle containing coating composition, comprising:

mixing a composition comprising metal pigment particles treated with a salt having the following formula to inhibit their reaction with water with a dispersion carrier, the dispersion carrier being liquid at room temperature and compatible with a vehicle for forming a coating composition



wherein a ranges from 0.25 to 2.0,

b ranges from 0.0 to 1.75, and a + b = 2.0,

R is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, and alkylaryl and comprises at least 6 carbon atoms;

R_1 comprises at least six carbon atoms and is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, or alkylaryl, and

X and Y are each independently either hydrogen or a moiety having from 1 to 20 carbon atoms selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, and alkylaryl.

78. The method according to claim 77, wherein R further comprises at least one functional group selected from the group consisting of hydroxyl, carbonyl, carboxyl, epoxy, ether, amino, nitro, nitrile, thio, silyl, sulfo, phosphato and halo.

79. The method according to claim 77, wherein X and Y each independently have at least one functional group selected from the group consisting of hydroxyl, carbonyl, carboxyl, epoxy, ether, amino, nitro, nitrile, thio, silyl, sulfo, phosphato and halo.